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Tibouchina triprovincialis, a new species of Melastomataceae from the Southwestern Amazonian grasslands

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Abstract

Tibouchina triprovincialis is a new species collected in the Brazilian states of Amazonas, Mato Grosso, and Rondônia. All gatherings from Amazonas and Rondônia come from the "Parque Nacional dos Campos Amazônicos", while the single gathering outside it comes from northwestern Mato Grosso. Dense and extensive populations of this small shrub occur in "hyperseasonal savannas", i.e. savannic enclaves in the middle of the Amazonian rainforest, with a thick herbaceous layer and very few shrubs or trees, growing on poorly drained soils. *Tibouchina triprovincialis* differs from both *T. aspera* and *T. spruceana* by the smaller leaves, with shorter petioles, 0.6–1.5 mm long (*vs*. 3–10 mm in *T. spruceana*, 2–10 mm in *T. aspera*) and blades 5–11 mm long (*vs*. 20–50 mm in *T. spruceana*, 20–80 in *T. aspera*), the abaxial surface densely covered with broad scales that conceal the surfaces of veins and the actual surfaces between the veins (*vs*. moderately covered with slender scales or trichomes that do not conceal the surfaces beneath, on both the veins and the actual surfaces between the veins). As for extinction risk, we suggest that *T. triprovincialis* should be regarded as "Least Concern" (LC).

Keywords: Angiosperms, Melastomateae, Taxonomy

Introduction

Tibouchina Aublet (1775: 445) in its broader, traditional circumscription (Cogniaux 1885, 1891) was accepted till the beginning of the 21st century (Renner 1993; Michelangeli *et al*. 2013). By then, it had about 250 species restricted to the Neotropics, and was divided into 11 sections, which, in turn, were still the ones proposed by Cogniaux (1885, 1891). Three of these sections included species covered with an indumentum of flattened scales (Todzia & Almeda 1991), i.e. "lepidote": *Tibouchina* sect. *Tibouchina* (Naudin 1850: 153) Cogniaux (1885: 374) had 2–4, fused bracts/bracteoles, and stamens with glabrous filaments and pedoconnective appendages; *Tibouchina* sect. *Barbigerae* (Naudin 1850: 153) Cogniaux (1885: 376) had free bracts/bracteoles, and the stamens have filaments either glabrous or villose and the pedoconnective appendages with a tuft of long trichomes; finally, *Tibouchina* sect. *Lepidotae* Cogniaux (1885: 372) had free bracts/bracteoles, and stamens with glabrous filaments and pedoconnective appendages. The new, narrower circumscription of *Tibouchina* resulted from phylogenetic analyses showing that the genus in its broader sense was polyphyletic (Michelangeli *et al*. 2013). Apart from *Tibouchina*, three other genera have been since recognized: *Pleroma* Don (1823: 293), *Chaetogastra* De Candolle (1828: 131), and *Andesanthus* Guimarães & Michelangeli (in Guimarães *et al*. 2019: 947). *Tibouchina* "*stricto sensu*" remained with the species that belonged to sections *Tibouchina* (to which belongs the type, *Tibouchina aspera* Aublet 1775: 446) and *Barbigerae* (Guimarães *et al*. 2019), while the section *Lepidotae* (the third one with lepidote indumentum) became the genus *Andesanthus*.

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In its strict, modern sense, *Tibouchina* has 33 species, from which 30 were listed by Guimarães *et al.* (2019), plus two species described later by Meyer *et al*. (2023), and *T. kunhardtii* Gleason (1950: 242), previously placed in *Chaetogastra* but confirmed in *Tibouchina* by Jantzen *et al*. (2022). These species are distributed from Central America to Amazonian Brazil and Bolivia, including Venezuela and Guyana, Suriname and French Guiana (Guimarães *et al*. 2019). All species seem to grow in "savanna-like habitats", mainly the Central-Brazilian "Cerrados" and "Campos Rupestres", but also "Llanos de Mojos" (Bolivia), "Lannos" in Colombia and Venezuela, "Amazonian Savannas" in Brazil, and open summit vegetation on the "Tepuis" (mostly Venezuela and Guianas) according to Jantzen *et al*. (2022).

The species of *Tibouchina* are apparently distributed in three main clades that are explained mainly by distribution (Jantzen *et al*. 2022): (1) the "widespread clade" has two species, precisely the same two belonging to the former *Tibouchina* sect. *Tibouchina*; (2) the "Southern Clade", with most species occurring south of the Amazon River, and also most of them belonging to *Tibouchina* sect. *Barbigerae*; and (3) the "Northern Clade", with all species occurring to the north of the Amazon River, mostly in Venezuela—curiously, the majority of species in these group was described in the 20th century, and then were not treated by Cogniaux (1885, 1891). These groups are generally explained by the same characters that Cogniaux (1885, 1891) used for his sections, but for the fact that the characters that defined *Tibouchina* sect. *Lepidotae* (now in *Andesanthus*) now define the species from the "Northern Clade"; these are the non-fused bracteoles and glabrous pedoconnectives. The species in the "Widespread Clade" have fused bracteoles and glabrous pedoconnectives, and the ones in the "Southern Clade" usually have non-fused bracts and the pedoconnectives with tufts of trichomes (Jantzen *et al*. 2022). The species that is described here has fused bracteoles and glabrous pedoconnectives and consequently belongs to the "Widespread Clade". Paradoxically, its vegetative morphology also resembles the species in the geographically distant "Northern Clade" because of its smaller leaves and denser, more robust scales, and it is very distinct from the geographically closer species from the "Southern Clade", which in turn usually have bigger leaves and inflorescences.

In agreement with Jantzen's statement that plants of *Tibouchina* usually inhabit savanna-like environments (Jantzen *et al*. 2022), the new species described here has been collected in natural grasslands with a thick herbaceous layer and scattered small shrubs on sandy soils that are seasonally waterlogged, resulting in a "hyperseasonal savanna" (Walter *et al*. 2008). These savannic enclaves inside and intermingled with Amazonian Ombrophilous Forest have been extensively explained as part of the Brazilian Savannas, i.e. Cerrado (D'Amico 2016). They have also been called as "Disjunct Amazonian Savanna", which in turn would be one of the seven main "provinces" of the Cerrado, according to Ratter *et al*. (2003). These areas are quite rich and particular, in terms of fauna and flora, which motivated the establishment of a National Park, ("Parque Nacional dos Campos Amazônicos") to protect them (D'Amico 2016). At least one new plant species has been recently described for this area: *Mabea dalyana* Bigio *et al*. (2022: 2) seems to be endemic to Amazonian hyperseasonal savannas, as seems the case for the new species described here.

Material and methods

The descriptions were based in either dry or rehydrated material from the specimens, but some flower details were based in parts of the holotype/isotypes collection that were conserved in ethanol. Measurements were taken directly on the specimens, or from photographs in stereomicroscope and posterior analysis in software ImageJ (Schneider *et al*. 2012). The general description followed a proxy from Meyer *et al.* (2023), while the one for de indumentum followed Wurdack (1986), and was based on specimens at RON and UPCB. Through searches in databases such as Smithsonian Institution (https://collections.nmnh.si.edu/search/botany/), REFLORA (https://floradobrasil.jbrj.gov.br/reflora/herbarioVirtual/), and SpeciesLink/CRIA (https://specieslink.net/search/), we were able to retrieve images of additional material from HUEFS, INPA, and US.

Comparisons with other species were based on the analysis *in loco* of specimens at UPCB, as well as on images from the same sources listed above, and information given by Wurdak (1973). Measurements for leaves and flower parts for the Venezuelan species that were used in the comparisons were taken from the respective diagnoses and from Wurdack (1973).

For Scanning Electron Microscopy (SEM) analyses, pickled samples of branches, leaves, hypanthium, and seeds (the latter from a dried specimen) were dehydrated in an ethanol series, critically point dried, mounted on aluminum stubs, coated with gold, and photographed using a Mira3 Tescan scanning electron microscope.

The conservation status for each species was evaluated according to criteria adopted by the International Union for Conservation of Nature (IUCN 2024). The extent of occurrence (EOO) and area of occupancy (AOO) were calculated

using Kew's GeoCAT tool (available at: https://geocat.iucnredlist.org/; Bachman *et al*. 2011). The distribution map was made in ArcGIS 10.5 (ESRI 2016) based on the points mentioned in the specimen labels.

Taxonomic treatment

Tibouchina triprovincialis R.Goldenb. & F.S.Mey., *sp. nov*. (Figures 1–4)

Type:—BRAZIL, Rondônia: Machadinho D'Oeste, Distrito de Tabajara, Parque Nacional dos Campos Amazônicos, campo graminoso na cabeceira do igarapé do Marmelo, 8°55'4"S, 61°55'2"W, elev. 90 m, 10 March 2025. *R. Goldenberg, H. Medeiros, I. Mendes-Silva, M. Nascimento 3514* (holotype: RON00026121; isotypes FLOR, NY, RB, UPCB0090998).

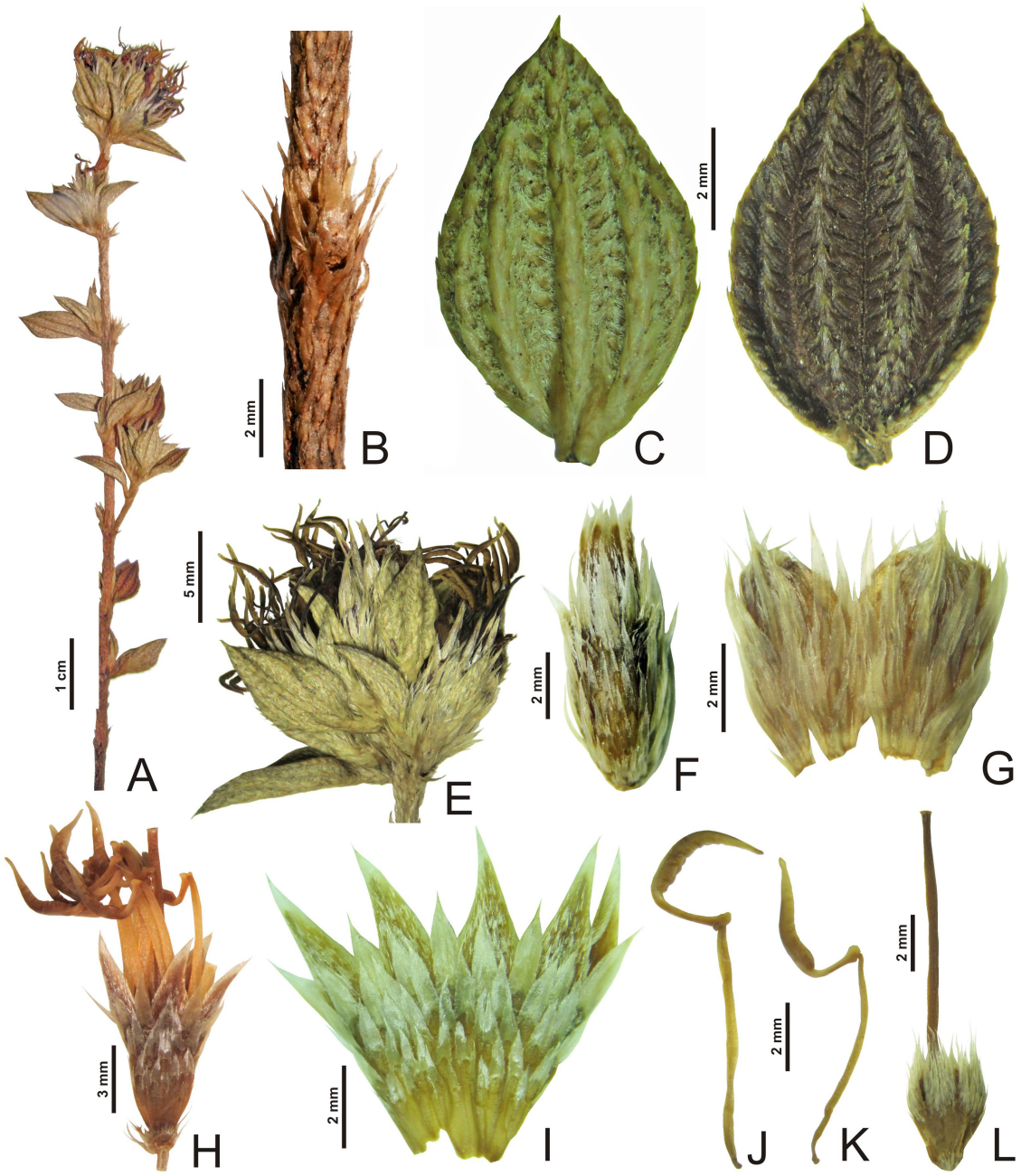

FIGURE 1. Plate with images taken from the paratype and holotype of *Tibouchina triprovincialis*. A. Fertile branch. B. Stem with nodal and internodal scales. C. Leaf, abaxial surface. D. Leaf, adaxial surface. E. Apical glomerule. F. Flower bud. G. Pair of fused bracteoles, abaxial surface. H. Flower at anthesis, petals removed. I. Hypanthium and calyx, longitudinal section, abaxial surface. J. Antesepalous stamen. K. Antepetalous stamen. L. Gynoecium. (A, B, F from *Silva et al. 23* at UPCB; C–E, G–L from *Goldenberg et al. 3514,* fixed in ethanol in the field).

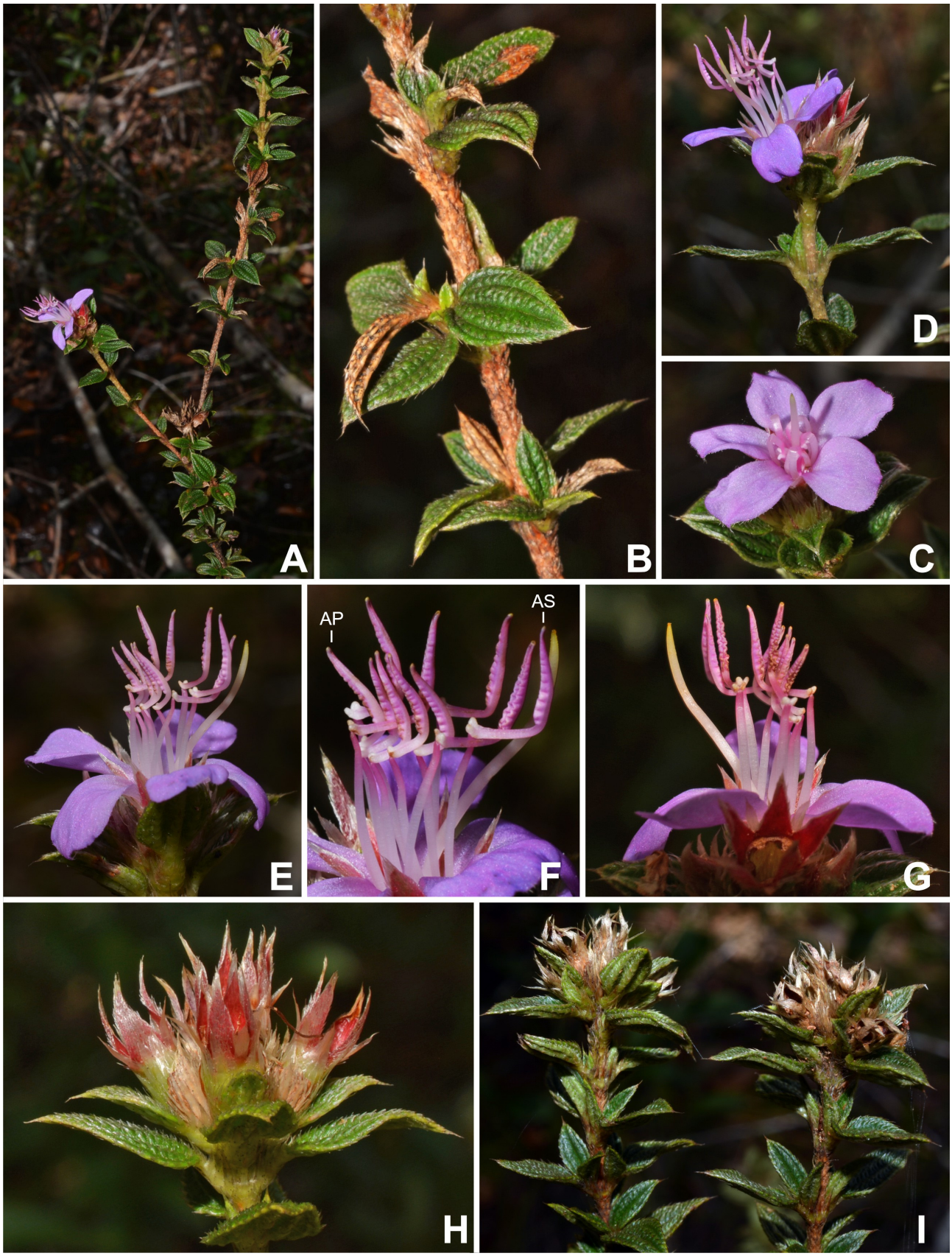

FIGURE 2. Photos of *Tibouchina triprovincialis* in the field. A. Fertile plant. B. Stem and leaves profusely covered with scales. C. Flower at the beginning of the anthesis, with the stamens still folded inside the hypanthium. D. Branch apex with a glomerule. E, G. Flower, lateral view, in different positions. F. Stamens (AP: antepetalous; AS: antesepalous). H. Glomerule with young fruits. I. Branches with old fruits. (Photos by R. Goldenberg, from *Goldenberg et al. 3514*, *Medeiros et al. 6337*, and *Mendes-Silva et al.* 1190).

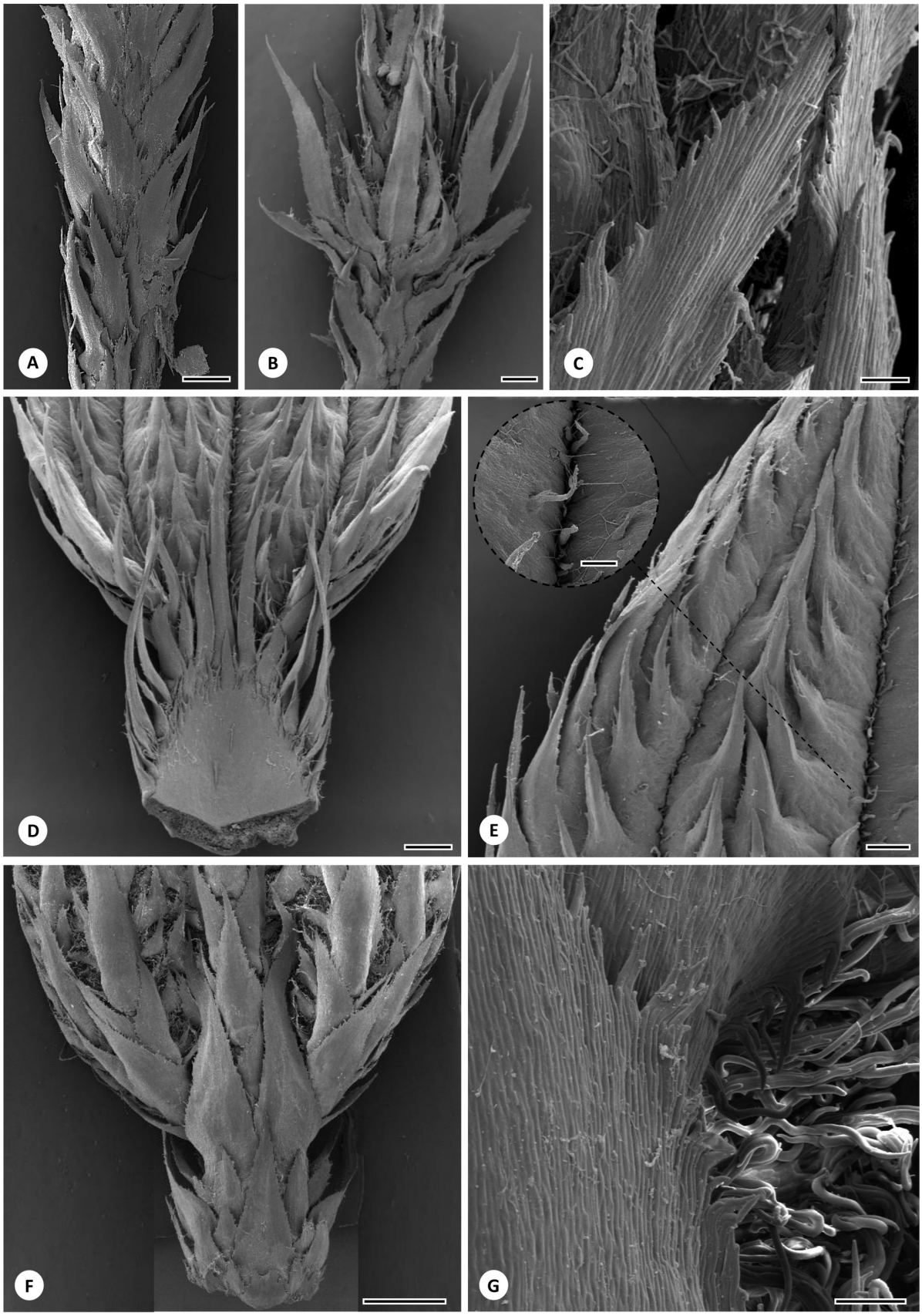

FIGURE 3. SEM of vegetative organs of *Tibouchina triprovincialis*. A. Internode. B. Node. C. Detail of the scales of the internode. D. Scales on the adaxial surface of the leaf blade and on the petiole. E. Adaxial leaf surface showing tector trichomes in grooves (zoomed-in area indicated by dotted circle). F. Scales on the abaxial surface of the leaf blade and on the petiole. G. Detail of the abaxial surface showing scales and interspersed vermiform trichomes underneath. Scale bars: A, B = 0.5 mm; C = 50 µm; D = 0.5 mm; E = 250 µm; F = 1 mm; G = 50 µm. Zoomed-in areas in E = 100 µm. (From *Goldenberg et al. 3514*).

Diagnosis:—*Tibouchina triprovincialis* differs from both *T. aspera* and *Tibouchina spruceana* Cogniaux (1885: 376) by the smaller leaves, with shorter petioles, 0.6–1.5 mm long (*vs*. 3–10 mm in *T. spruceana*, 2–10 mm in *T. aspera*) and blades 5–11 mm long (*vs*. 20–50 mm in *T. spruceana*, 20–80 in *T. aspera*), the abaxial surface densely covered with broad scales that conceal the surfaces of veins and the actual surfaces between the veins (*vs*. moderately covered with slender scales or trichomes that do not conceal the surfaces beneath, on both the veins and the actual surfaces between the veins).

Description:—Small shrub 20–80 cm tall, erect, the slender branches usually only a few, cylindrical in both younger and older branches; younger branches densely covered with light-brown to whitish scales, these on the internodes 0.7–2.2 × 0.2–0.4 mm, narrowly triangular to lanceolate, appressed, apex narrowly acute, apiculate, margins either densely lacerate-ciliate along its whole length (cilia up to 0.2 mm long) on the shorter scales, or remotely serrate and short ciliate (cilia up to 0.1 mm long) on the longer ones, on the nodes bigger, up to 4 × 0.8 mm, slightly erect, apex narrowly acute, apiculate. **Leaves** opposite, but sometimes with axillary sessile to very short branches that result in leaves resembling fasciculate, perpendicular to the stem (but somewhat erect in the axillary fascicles); **petiole** 0.5–1.5 mm long, broad, applanate and adaxially slightly folded, adaxial surface apparently glabrous, abaxial surface with scales 0.5–2.2 × 0.2–0.8mm, triangular to narrowly triangular, appressed, and also two similar but much bigger scales at the apex of the petiole that overlap the leaf base surface, these 3–3.5 x 0.7–1 mm, both with the apex acute to narrowly acute, apiculate, margins remotely serrate and short ciliate, petiole margins with triangular to lanceolate scales 0.7–1 × 0-2–0,25 mm, and also bigger scales 1.5-2.6 × 0.15-0.2 mm, linear lanceolate, both with the apex triangular to narrowly triangular, margins remotely serrate and short ciliate, mixed with vermiform trichomes; **blade** coriaceous, 5–11 × 2–6 mm, oval to broadly oval or broadly elliptic, seldom oval or elliptic, plane but with the base usually slightly adaxially folded, apex acute to slightly acuminate, always tipped with an apical, robust, prickly seta 0.2–0.6 mm long, base round to obtuse, margins scale-ciliate, the scales strongly appressed, 0.4–1 mm long, broadly triangular and adaxially folded, apex subulate and apiculate, base grooved (where it contacts the surface), margins shortly ciliate where facing the adaxial surface of the blade, lacerate and long ciliate where facing the abaxial surface, acrodromous veins 3, basal, conspicuous, plus a clearly visible, confluent, incomplete vein (i.e., each vein going from the base till ½ to ⅔ of the blade's length), adaxial surface bullate, with lines of bulla-based scales, each line in the space between and following two of the veins, and also between the external-most veins and margins, the actual scales on the top of the bullae slightly appressed, 0.4–0.8 × 0.15–0.3 mm, triangular to narrowly triangular, apex subulate and apiculate, base with grooves that extend to the adjacent bullae, margins lacerate and shortly ciliate, and also smaller lateral scales (on each bulla), similar to the previous ones, 0.1–0.3 × 0.1–0.15 mm, and also mixed with a few vermiform trichomes, abaxial surface foveolate, densely covered with two types of scales, the ones on the veins strongly appressed, 0.8–2.4 × 0.4–0.7 mm, thick, lanceolate, apex apiculate, margins lacerate and shortly ciliate (cilia up to 0.1 mm long), the ones on the foveolae slightly erect, but with a curved apex, 0.5–1 × 0.3–0.6 mm, more delicate than the ones on the veins, triangular, apex narrowly acute, margins lacerate and ciliate (cilia up to 0.1 mm long), mixed with dense vermiform trichomes. **Inflorescences** with apical, sessile, 4–9-flowered glomerules, seldom with one or two additional triads on the axils of the first pair of leaves right below; **bracts** 5–7, surrounding each glomerule, similar to the leaves but shorter, 4–9 × 3–4 mm; **bracteoles** 2, whitish to whitish-brown, both fused for about ½ of their length around each flower, sessile, 5–6 × 2.5–3 mm, ovate, elliptic or obovate, apex acute or obtuse, but always apiculate, persistent in young fruits, adaxial surface glabrous with a few slender scales on the apex (0.3–0.5 mm long) and base (1–1.5 mm long), abaxial surface covered with two layers of whitish to hyaline, appressed scales, the biggest ones 2–4.5 × 0.3–0.5 mm, lanceolate to linear lanceolate, apex narrowly acute and seta-tipped, margins sparsely ciliate, the smaller ones 0.5–1 × 0.1–0.2 mm, linear-lanceolate to linear, apex narrowly acute, margins repand. **Flowers** 5–merous, sessile; **hypanthium** whitish-green, ca. 5 × 4 mm, campanulate, adaxial surface glabrous, the surface smooth but bearing the impressions of the ovary scales on the abaxial surface, these circular to elliptic, abaxial surface densely covered with whitish to hyaline, appressed scales 0.8–2.6 × 0.3–0.5 mm, lanceolate, apex acute and seta-tipped, margins repand or remotely ciliate, the upper 10 scales arranged in a crown around the sepals, alternating intersepalar and sepalar (these right outside de sepals), similar to the ones on the rest of the hypanthium but somewhat bigger, 2.2–3.3 × 0.5–0.8 mm; **sepals** whitish-red outside and bright red inside, 4.2–5 × 1.4–1.6 mm, narrowly triangular, apex acute and seta-tipped, adaxial surface glabrous, abaxial surface moderate to densely covered with fine, hyaline, appressed scales 0.1–0.4 mm long; **petals** purple, 6–9 × ca. 5 mm, obovate, apex truncate or abruptly and shortly acuminate, with a scalariform seta 0.7–0.9 mm long, positioned in the middle of the truncate apex or on the acumen, always pointing downwards, margin moderately ciliate, with whitish trichomes or very narrow scales 0.1–0.6 mm long, erect, eglandular; **stamens** 10, slightly dimorphic in size, completely glabrous, the filaments whitish but becoming light-purple at the apex, pedoconnective light purple, straight, with white ventral appendages, these consisting of two rounded lobes 0.3–0.4

mm long in both cycles, anthers light purple but with the very tip yellowish around the pore, corrugated, subulate, in an almost 90º angle with the pedoconnective, straight to slightly curved, the pore apical but slightly ventrally inclined, antesepalous with filaments 5.5–8 mm long, pedoconnective 1.5–2.5 mm prolonged below the thecae, anthers 3.5–4.5 × ca. 0.5 mm, antepetalous with filaments 4–7 mm long, pedoconnective 1–1.8 mm prolonged below the thecae, anthers 3.5–4 × ca. 0.6 mm; **ovary** superior, 5-locular, 2–3 × 2–2.5 mm, slightly 5-costate and the apex 5-lobed, densely covered with scales, these clustered in on each one of the five lobes from the distalmost point to half way to two thirds down to the ovary base, the whitish, erect scales ranging from 0.3–0.6 mm long closest to the base, then triangular to narrowly triangular, apex acute to narrowly acute, apiculate, to 1–2 mm long at the very apex, then narrowly triangular to linear, apex narrowly acute, apiculate; **style** 7.5–9 mm, filiform, straight, glabrous, stigma 0.4–0.5 mm diam., truncate. **Velatidia** with persistent sepals, 10–11 × ca. 3 mm (with the sepals) or 4.5–5 × ca. 3 mm (without the sepals), the five carpels (each keeping the scales on the apex) detaching from the central axis of the fruit, and this with persistent, perpendicular placentae; **seeds** 0.9–1 × 0.5–0.55 mm, cochleate, testa tuberculate.

Paratypes:—BRAZIL. Amazonas: Manicoré, Transamazônica, 149 Km sudeste de Humaitá, 5 Km Sul de Bodocó, "Campos naturais isolados", 8º36'S, 61º25'W, 24 October 1993, *T.M. Sanaiotti 274* (INPA, US); Trilha do encontro dos igarapés Macaco e Branco, Parque Nacional dos Campos Amazônicos, cerrado hiperestacional, 8º25'37"S, 61º43'69"W, 8 May 2009, *L.C.P. Lima, L.P. Magalhães, A.S. Toledo, A.A. Souza 634* (HUEFS); Novo Aripuanã, Parque Nacional dos Campos Amazônicos, Cerrado Hiperestacional, 8º28'37"S, 61º13'85"W, 2 April 2018, *C.B. Anjos, K.S. Gonçalves, K.R.C. Paixão, A.L.P. Silveira, J.S. Laurentino, F. Bonadeu 7* (RON). Mato Grosso: Colniza, Campinarana, ponto 28, MIR 270/271, 9º06'55" S, 60º48'27"W, alt. 214 m, 16 December 2020, *S.S. Silva, J.O. Ala Filho, E.A. Silveira 23* (UFMT, UPCB). Rondônia: Machadinho D'Oeste, Vila de Tabajara, Parque Nacional dos Campos Amazônicos, Linha 5, Módulo 4 do RAPELD para o estudo Ambiental do AHE Tabajara, Savana Parque, UTM 20 L 621.419/9.007.204, February 2024. *T.R.C. Capistrano et al. 114* (RON); Machadinho D'Oeste, Distrito de Tabajara, Parque Nacional dos Campos Amazônicos, Igarapé Marmelo, Campo Aberto, elev. 100m, 8°55'1"S, 61°55'1"W, 10 March 2025, *H. Medeiros, R. Goldenberg, I. Mendes-Silva, M. Nascimento 6337* (FLOR, NY, RB, RON, UPCB); Machadinho D'Oeste, Distrito de Tabajara, Parque Nacional dos Campos Amazônicos, Igarapé Marmelo, Campo Aberto, elev. 100m, 8°55'1"S, 61°55'1"W, 10 March 2025, *I. Mendes-Silva, R. Goldenberg, H. Medeiros, M. Nascimento 1190* (FLOR, NY, RB, RON, UPCB).

Distribution and habitat:—The distribution of *T. triprovincialis* is apparently restricted to Amazonian Brazil, in three states: Amazonas, Mato Grosso, and Rondônia (Figure 5). All collections from Amazonas and Rondônia come from the "Parque Nacional dos Campos Amazônicos" (from now on PNCA, see D'Amico 2016). The single gathering outside PNCA is from northwestern Mato Grosso, which in turn was collected in the "Estação Ecológica do Rio Roosevelt" (EERR), a conservation area managed by the state of Mato Grosso (see https://uc.socioambiental.org/arp/1346); the label of *Silva et al. 23* does not mention this conservation area, but the coordinates allowed us to place it in the EERR. Except for the three gatherings made by our team, the descriptions of the vegetation at the collection sites vary significantly among the respective collectors: *Sanaiotti 274* (Amazonas) describes the place as "campo mal drenado" (poorly drained grasslands) and "campos naturais isolados" (natural and isolated grasslands); *Anjos et al. 7* (Amazonas) call it "cerrado hiperestacional" (hyperseasonal savanna); *Capistrano et al. 114* (Amazonas) say "savana parque" (savanna grasslands lacking shrubs or trees); *Goldenberg et al. 3514*, *Medeiros et al. 6337* and *Mendes-Silva et al. 1190* (Rondônia) describe the vegetation as "campos graminosos" (grasslands with Poaceae); *Silva et al. 23* (Mato Grosso) say "campinarana" (vegetation with shrubs and herbs on white sand). All seem to converge into a concept that describes a vegetation with a thick herbaceous layer and very few shrubs or trees, growing on poorly drained soils (Figure 6). As explained in the introduction, this vegetation better fits the definition of "hyperseasonal savannas", i.e. savannic enclaves in the middle of the Amazonian rainforest. *Tibouchina triprovincialis* seems to follow the same distribution pattern as *Mabea dalyana* (Bigio *et al.* 2022). Although other "hyperseasonal savannas" enclaves occur in southwestern Amazonia, they do not appear to host either of the two species described for the PNCA. These occurrences reinforce the uniqueness of this Amazonian vegetation and underscore the importance of the conservation units established to protect it.

We don't have information on population density of *T. triprovincialis* for the other collections, but the ones visited by us were very extensive and dense (Figure 6); we found hundreds of individuals growing among the grasses, in all areas where these grasses occurred, even in different grassland patches separated by arboreal vegetation.

Phenology:—Collected with flowers and fruits from February to May, and then October and December.

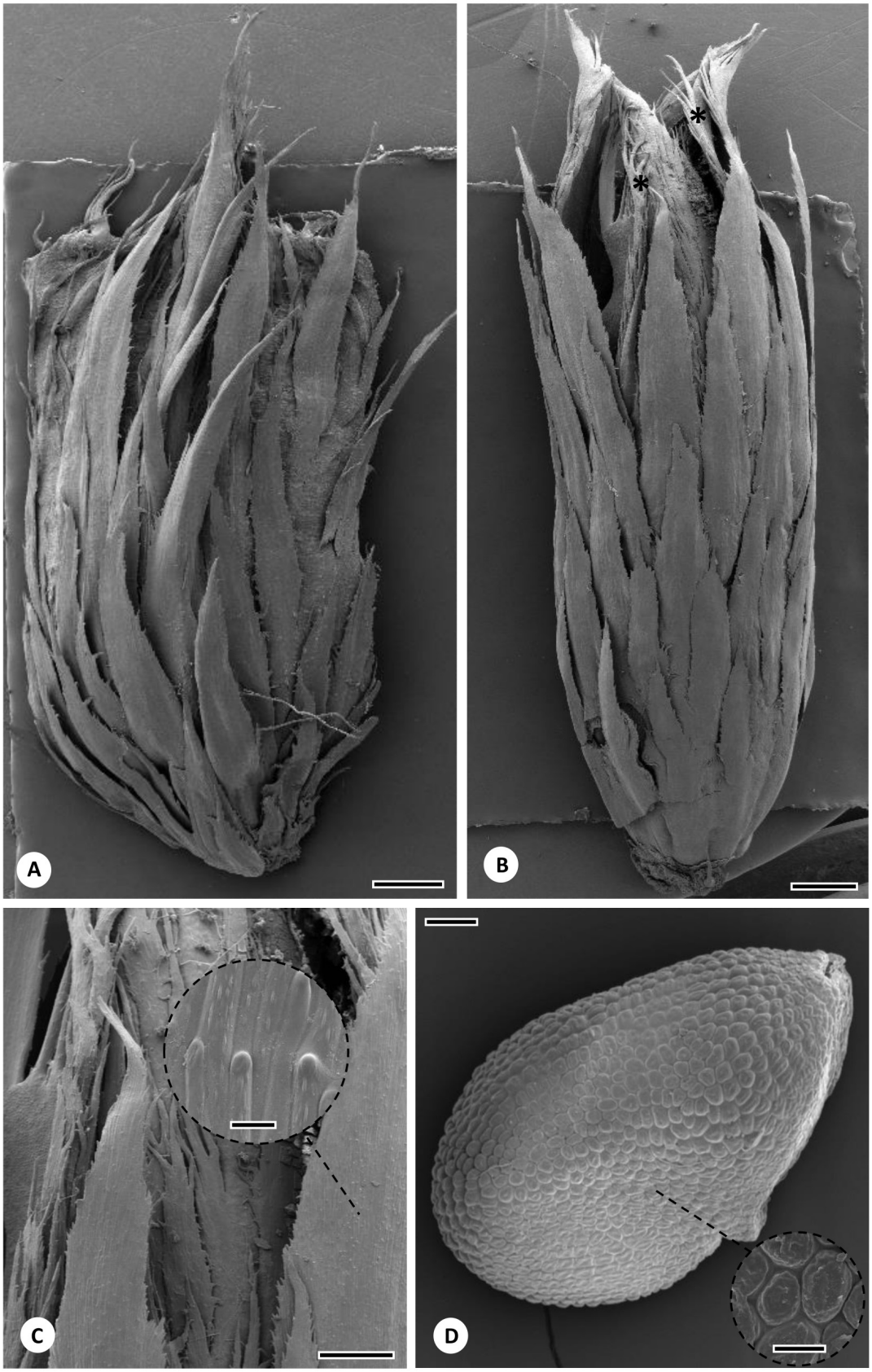

FIGURE 4. SEM of bracteole, hypanthium, and seeds of *Tibouchina triprovincialis*. A. Scales on the bracteole. B. Scales on the hypanthium and sepals (asterisks). C. Detail of the hypanthium showing scale ornamentation (zoomed-in area indicated by dotted circle). D. Seed showing surface detail (zoomed-in area indicated by dotted circle). Scale bars: A, B= 0.5 mm; C = 200 µm; D = 50 µm. Zoomed-in areas in C = 10 µm; in D = 25 µm. (A-C from *Goldenberg et al. 3514,* fixed in ethanol in the field; D from *Capistrano et al. 114*).

Conservation status:—*Tibouchina triprovincialis* has an EOO of 2,686.670 km² and an AOO of 24.000 km². In Western/Southern Amazonia, where this species is found, the major threat affecting biodiversity is the destruction of natural areas with both forest and grasslands, and their replacement with large-scale plantations or pastures. The EOO values and the number of threat situations are quite close to the thresholds for its inclusion in a threat category.

Most collections of *T. triprovincialis* were made inside the PNCA, while one of them was collected in EERR (see acronyms above), which means that they are currently protected. Nevertheless, both PNCA and EERR have been recently challenged as effective conservation areas. Part of the PNCA may be flooded if the Brazilian government approves a dam in the Rio Machadinho for a hydroelectric power plant (D'Amico 2016). All conservation areas in the state of Mato Grosso have been threatened by invasions, both illegal and through lawsuits, and mismanagement, leading to criminal fires, degradation and loss of biodiversity (Dorval *et al.* 2012). Despite being inside EERR, the specimen from Mato Grosso was collected at the roadside, in a region that is well known for land conflicts and illegal gold mining.

There is no data on population decline for the application of other criteria, but the populations that were visited by the authors and described right above (see *Goldenberg et al. 3514*, *Medeiros et al. 6337*, and *Mendes-Silva et al. 1190*) were enormous, with hundreds of individuals (Figure 6). In conclusion, we suggest that *T. triprovincialis* should be regarded as Least Concern (LC).

Etymology:—The epithet "*triprovincialis*" refers to the fact that this species has been collected in three Brazilian states: Amazonas, Mato Grosso and Rondônia (see Figure 5).

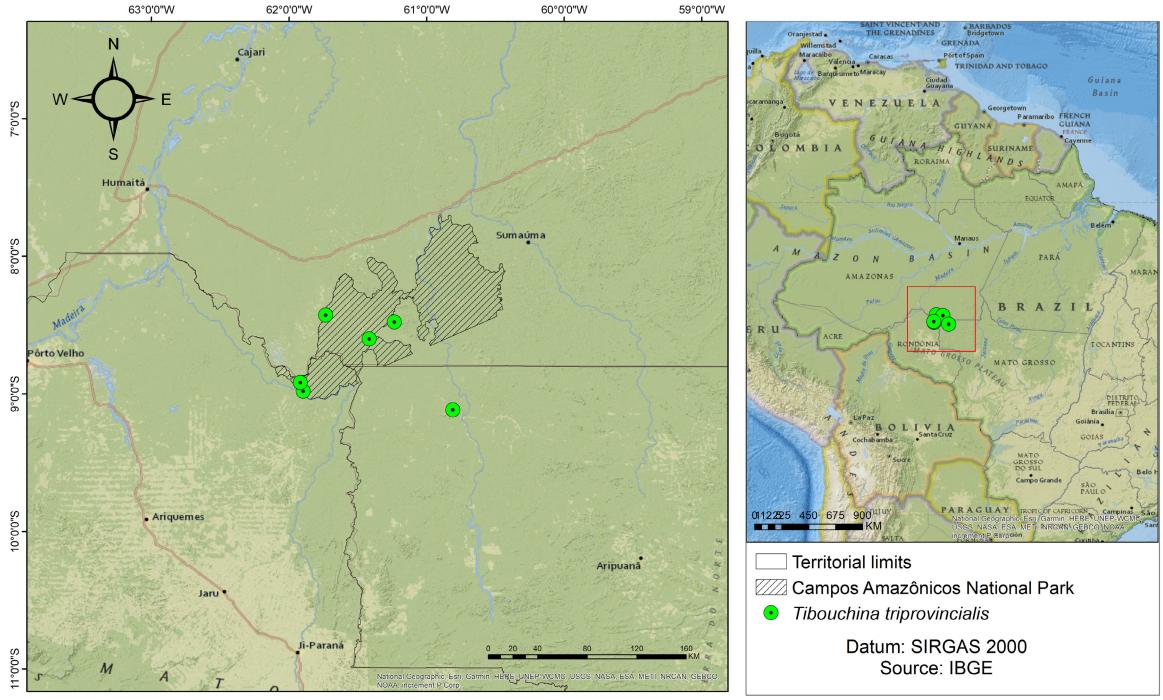

FIGURE 5. Occurrence map of *Tibouchina triprovincialis*.

Notes:—According to the modern circumscription of *Tibouchina* (Guimarães *et al.* 2025), the plants in the genus are covered with an indumentum of scales, may have either fused or free bracteoles, and the stamens are glabrous or with trichomes over the filaments and pedoconnective appendages. The same authors define *Tibouchina* with "lilac or purple anthers, and petal color not changing with age". According to this circumscription, *T. triprovincialis* belongs to *Tibouchina*, and not to the following two other genera in tribe Melastomateae Bartling (1830: 329; see Veranso-Libalah *et al.* 2022) with lepidote/scaly trichomes. *Andesanthus* has nine species restricted to the Andes and should be recognized by the "yellow anthers and isomorphic stamens, or if stamens dimorphic then with the larger anthers yellow and smaller anthers pink or red; petal color commonly changing with age" (*ipsis litteris* from Guimarães *et al.* 2019). *Loricalepis* Brade (1938: 71) has two species occurring on white sand vegetation, one in the Upper Rio Negro basin in Brazil and Colombia, and the other in the Atlantic coast in Bahia, also in Brazil (Goldenberg *et al.* 2020); both species have smaller and much sparser scales, and also "young stem nodes with a transversal ridge, thick-cartilaginous, crenulate-serrulate and paleaceous- ciliate leaf margins, petals with glandulose-ciliate margins, stamens with pedoconnectives not at all or little prolonged" (*fide* Goldenberg *et al.* 2020).

Tibouchina triprovincialis fits the circumscription of the former *Tibouchina* sect. *Tibouchina* (Cogniaux, 1885, 1891) due to the vegetative parts covered with scales, the fused pair of bracts, and stamens with glabrous filaments and pedoconnective appendages. The only two species belonging to this section were *T. aspera* and *T. spruceana*, and no one else has been added to this pair since the 19th century. The distinction between these two species is not very clear, mostly because of the huge morphological variation found in both, but mostly in *T. aspera*, for which three varieties have been described (see Cogniaux 1885). The two species differ mainly by the broader, 5-nerved leaves of *T. aspera*, when compared to the narrower, 3-nerved leaves of *T. spruceana*. Their wide distributions, as noticed by Jantzen *et al*. (2022), overlap in Colombia, Venezuela and northern Brazil, but *T. aspera* also occurs in Central America (Belize and Nicaragua), Guianas and Peru. Their distribution in Brazil also overlaps with that of *T. triprovincialis*, except for the absence of *T. spruceana* in Rondônia (Flora e Funga do Brasil 2025). As already shown in the diagnosis, *T. triprovincialis* differs from both due to the smaller leaves, and the plants covered with denser and stouter scales all over. It also has bullate leaves with broader, triangular scales on the top of each bulla, on the adaxial surface. Its flowers are also slightly smaller, with the hypanthia ca. 5 mm, sepals 4.2–5 mm, and anthers 3.5–4.5 mm long, while in *T. aspera* the hypanthia are 7–8 mm long, the sepals 5–5.5 mm long, and the anthers 6–8 mm long, while in *T. spruceana* the hypanthia are ca. 5–6 mm long, the sepals ca. 5 mm, and the anthers 5–7 mm.

Geographically close to *T. triprovincialis*, most species of *Tibouchina* occurring to the south of the Amazon River (i.e., the "southern group" proposed by Jantzen *et al*. 2022) belong to the former *Tibouchina* sect. *Barbigerae*, and all differ from *T. triprovincialis* by the non-fused bracteoles and stamens with the pedoconnective appendages with a tuft of trichomes. Most of these species also have bigger leaves and thyrsoid inflorescences, instead of the small leaves and glomerules found in the new species. We opted not to compare *T. triprovincialis* with the species in this group, since the species that are morphologically closely related to it belong to the group discussed below.

All the geographically more distant "northern species" (Jantzen *et al*. 2022) occur in Amazonian Venezuela (Wurdack 1993), with one species, *T. catharinae* Pittier (1947: 18), that also occurs in adjacent Colombia and Brazil (Amazonas). They all differ from *T. triprovincialis* by the non-fused bracteoles, but they share with it the dense and robust scales all over (except for *T. kunhardtii*), glabrous stamens and the smaller, more delicate plants, with small leaves. The two species that are morphologically closer to *T. triprovincialis* are *T. dissitiflora* Wurdack in Maguire & Wurdack (1958: 101) and *T. huberi* Wurdack (1990: 318-319; this species was not sampled by Jantzen *et al.* 2022). Both have slightly bigger leaves with a plane, non-bullate and striolate adaxial surface, and slightly bigger flowers. The leaves in *T. dissitiflora* have petioles 2–4 mm long and blades 10–25 × 8–15 mm, while *T. huberi* has petioles 3–7 mm and blades 15–45 × 10–20 mm, and *T. triprovincialis* has petioles 0.6–1.5 mm and blades 5–11 × 2–6 mm. The flowers in *T. dissitiflora* have hypanthia 6–6.5 mm long, sepals 7–11 mm long, and anthers 6–7.5 mm long, while *T. huberi* has hypanthia ca. 7 mm long, sepals ca. 6.5 mm, and anthers 6.8–8 mm, and *M. triprovincialis* has hypanthia ca. 5 mm, sepals 4.2–5 mm, and anthers 3.5–4.5 mm long.

Another taxon among the "northern species" (Jantzen *et al*. 2022) is *Tibouchina duidae* Gleason in Steyermark (1952: 428), that differs from *T. triprovincialis* by the narrow 3-nerved leaves, with the lateral veins concealed by the scales and not visible on the adaxial surface (*vs*. lateral veins very distinct). *Tibouchina fraterna* N.E.Brown in McConnel & Quelch (1901: 28) differs from *T. triprovincialis* by the plane, non-bullate leaves with three veins, the two lateral running close to the margin (*vs*. three veins with the first pair of laterals equidistant between midvein and margins, plus a faint, incomplete pair), and thyrsoid inflorescences (*vs*. glomerulate). Both *Tibouchina sipapoana* Gleason (1950: 240) and *T. steyermarkii* Wurdack in Steyermark (1972: 873) differ from *T. triprovincialis* by the 1-nerved leaves (*vs*. 3-nerved plus a faint, incomplete pair of veins near the leaf margin). *Tibouchina catharinae* and *T. striphnocalyx* (De Candolle 1828: 140) Gleason (1950: 241) differ from *T. triprovincialis* by the bigger leaves, paniculate inflorescences, and intersepalar sinuses with penicellate projections, these similar to the ones found in *Pterolepis* (De Candolle 1828: 140) Miquel (1840: 72) (*vs*. glomerulate inflorescences, and intersepalar sinuses lacking penicellate projections). Finally, *T. kunhardtii* differs from *T. triprovincialis* by the sparse scales on the branches, and thyrsoid inflorescences (*vs*. branches densely covered with scales, and glomerulate inflorescences).

The specimen *Anjos et al. 7* (RON) has been determined by P.J.F. Guimarães as *Tibouchina aspera*; its label indicates duplicates in UPCB and RB, but these have not been located. *Sanaiotti 274* (US) was seen by the late John. J. Wurdack, who wrote that this specimen "was not matched at US", probably meaning that he already knew that it was an undescribed species.

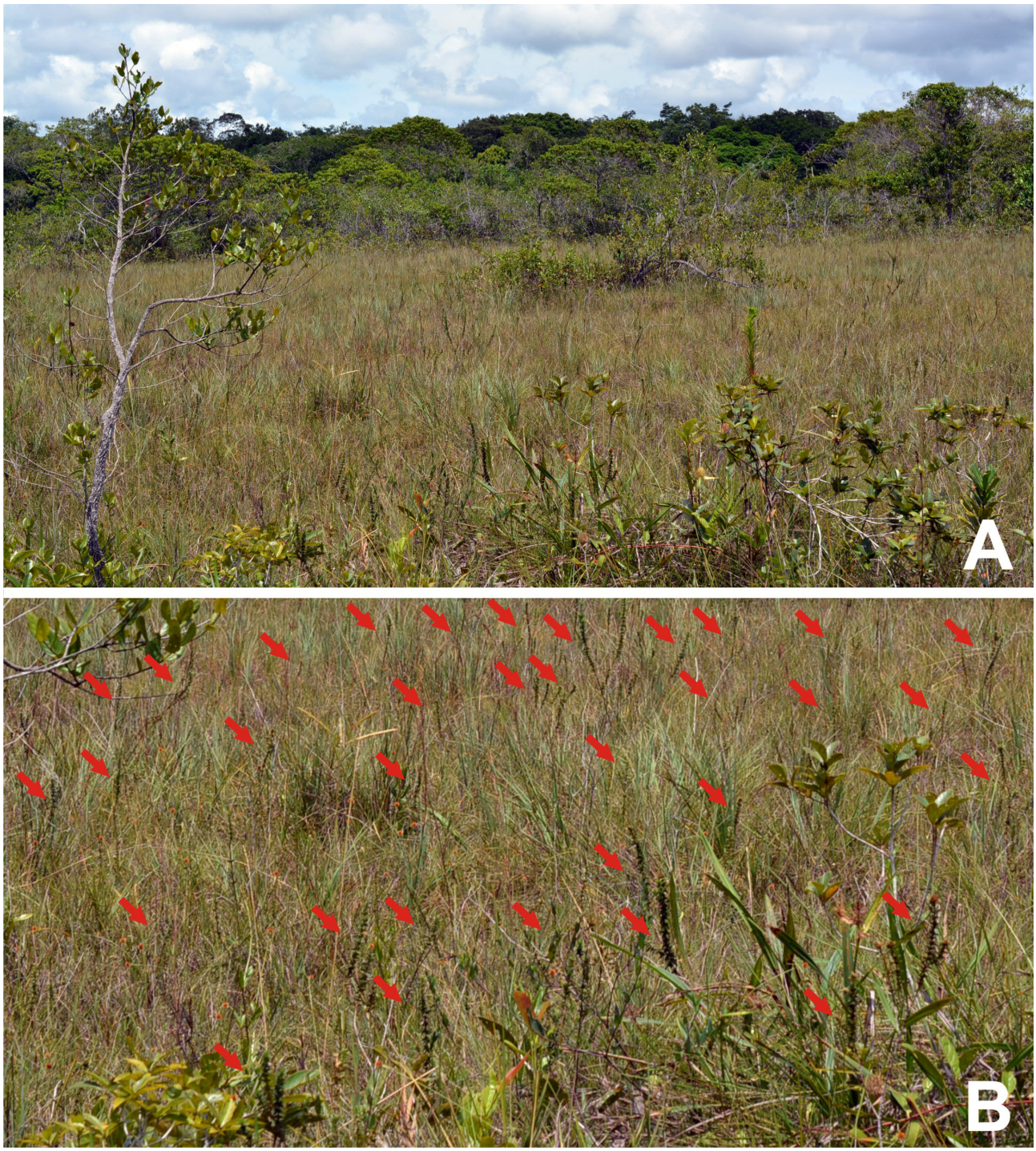

FIGURE 6. A population of *Tibouchina triprovincialis* in the field. A. Grasslands at the "Parque Nacional dos Campos Amazônicos", Machadinho D'Oeste, Rondônia, Brazil. B. Zoom from the same image, with red arrows showing how abundant the individuals of this species are among the grass. (Photos by R. Goldenberg).

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